

SAF-RC-029
Remaining Sites Confirmation Sampling -
Soil
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

mjp 02/15/06
INITIAL/DATE

COMMENTS:

SDG **K0062** SAF-RC-029

Waste Site: 128-D-2

RECEIVED
FEB 23 2006
EDMC

Date: 9 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Soil – Waste Site 128-D-2
Subject: Radiochemistry - Data Package No. K0062-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0062 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Test Date
J10D65	10/26/05	Solid	C	See note 1
J10D66	10/26/05	Solid	C	See note 1

1 – Nickel-63, gross alpha/beta, total strontium, technetium-99, total uranium, alpha spectroscopy and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

• Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

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• Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

• Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of a matrix spike analysis, all nickel-63 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

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• **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

• **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

• **Completeness**

Data package No. K0062 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, all nickel-63 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may

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be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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Appendix 1

Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

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RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0062	REVIEWER: TEI	Project: 128-D-2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nickel-63	J	All	No matrix spike analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSURE HANFORD					
Laboratory: EB		SDG: K0062			
Sample Number		J10D65		J10D66	
Remarks					
Sample Date		10/26/05		10/26/05	
Radiochemistry	RQL	Result	Q	Result	Q
Gross Alpha		7.83		12.7	
Gross Beta		17.5		17.2	
Nickel-63	30	-0.617	UJ	-0.370	UJ
Total strontium	1	0.078	U	0.042	U
Technetium-99	1	0.066	U	0.111	U
Total uranium (ug/g)		1.28		2.17	
Uranium-233/234	1	0.588		0.570	
Uranium-235	1	0.040		0.041	U
Uranium-238	1	0.490		0.872	
Plutonium-238	1	0	U	0.038	U
Plutonium-239/240	1	0	U	0.076	U
Americium-241	1	0.031	U	0.361	U
Potassium-40		9.31		10.4	
Cobalt 60	0.05	U	U	U	U
Cesium 137	0.05	U	U	U	U
Radium-226		0.363		0.355	
Radium-228		0.465		0.516	
Europium 152	0.1	U	U	U	U
Europium 154	0.1	U	U*	U	U*
Europium 155	0.1	U	U	U	U
Thorium-228		0.404		0.579	
Thorium-232		0.465		0.516	
Uranium-235(gea)		U	U	U	U
Uranium-238(gea)		U	U	U	U
Americium-241(gea)		U	U	U	U

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0062

R511003-01

J10D65

DATA SHEET

SDG <u>7753</u>	Client/Case no <u>Hanford</u>	SDG <u>K0062</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R511003-01</u>	Client sample id <u>J10D65</u>	
Dept sample id <u>7753-001</u>	Location/Matrix <u>128-D-2:5</u>	<u>SOLID</u>
Received <u>10/31/05</u>	Collected/Weight <u>10/26/05 12:10</u>	<u>1291 g</u>
% solids <u>97.7</u>	Custody/SAF No <u>RC-029-007</u>	<u>RC-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	7.83	4.1	3.7	10		93A
Gross Beta	12587-47-2	17.5	4.3	5.7	15		93B
Nickel 63	13981-37-8	-0.617	1.6	2.7	30	U	NI_L
Total Strontium	SR-RAD	0.078	0.17	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.066	0.25	0.53	15	U	TC
Total Uranium (ug/g)	7440-61-1	1.28	0.16	0.022	1.0		U_T
Uranium 233/234	U-233/234	0.588	0.27	0.25	1.0		U
Uranium 235	15117-96-1	0.040	0.079	0.30	1.0	U	U
Uranium 238	U-238	0.490	0.26	0.25	1.0		U
Plutonium 238	13981-16-3	0	0.063	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.063	0.24	1.0	U	PU
Americium 241	14596-10-2	0.031	0.062	0.24	1.0	U	AM
Potassium 40	13966-00-2	9.31	0.69	0.34			GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	0.363	0.061	0.060	0.10		GAM
Radium 228	15262-20-1	0.465	0.14	0.15	0.20		GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Thorium 228	14274-82-9	0.404	0.037	0.038			GAM
Thorium 232	TH-232	0.465	0.14	0.15			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

Remaining Sites Confirm.Samp. - Soil

Handwritten: ✓
2/14/06

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/17/05</u>

DATA SHEETS

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0062

R511003-02

J10D66

DATA SHEET

SDG <u>7753</u>	Client/Case no <u>Hanford</u>	SDG <u>K0062</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R511003-02</u>	Client sample id <u>J10D66</u>	
Dept sample id <u>7753-002</u>	Location/Matrix <u>128-D-2:5</u>	<u>SOLID</u>
Received <u>10/31/05</u>	Collected/Weight <u>10/26/05 12:35</u>	<u>1366 g</u>
% solids <u>97.8</u>	Custody/SAF No <u>RC-029-007</u>	<u>RC-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	12.7	4.2	3.3	10		93A
Gross Beta	12587-47-2	17.2	4.3	5.8	15		93B
Nickel 63	13981-37-8	-0.370	1.5	2.6	30	U J	NI_L
Total Strontium	SR-RAD	0.042	0.15	0.31	1.0	U	SR
Technetium 99	14133-76-7	0.111	0.30	0.59	15	U	TC
Total Uranium (ug/g)	7440-61-1	2.17	0.26	0.022	1.0		U_T
Uranium 233/234	U-233/234	0.570	0.27	0.26	1.0		U
Uranium 235	15117-96-1	0.041	0.081	0.31	1.0	U	U
Uranium 238	U-238	0.872	0.34	0.26	1.0		U
Plutonium 238	13981-16-3	0.038	0.076	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0.076	0.077	0.29	1.0	U	PU
Americium 241	14596-10-2	0.361	0.36	0.69	1.0	U	AM
Potassium 40	13966-00-2	10.4	0.88	0.43			GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	U		0.036	0.10	U	GAM
Radium 226	13982-63-3	0.355	0.082	0.080	0.10		GAM
Radium 228	15262-20-1	0.516	0.16	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.085	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.098	0.10	U	GAM
Thorium 228	14274-82-9	0.579	0.070	0.070			GAM
Thorium 232	TH-232	0.516	0.16	0.17			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		5.4		U	GAM
Americium 241	14596-10-2	U		0.13		U	GAM

Remaining Sites Confirm.Samp. - Soil

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2/14/06

DATA SHEETS

Page 2

SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/17/05</u>

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

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Case Narrative

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1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0062 was composed of two solid (soil) samples designated under SAF No. RC-029 with a Project Designation of Remaining Sites Confirmation Sampling – Soil. The Sampling Location was 128-D-2:5.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on November 17, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analysis

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analysis

No problems were encountered during the course of the analyses.

2.4 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analysis


No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy

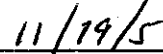
No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


Melissa C. Mannion
Senior Program Manager

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Date

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-029-007		Page 1 of 1						
Collector STANKOVICH/HUDSON		Company Contact Mike Stankovich		Telephone No. 531-7620		Project Coordinator KESSNER, JH		Price Code 8C Data Turnaround						
Project Designation Remaining Sites Confirmation Sampling - Soil		Sampling Location 128-D-25		K0062 (7753)		SAF No. RC-029		Air Quality <input type="checkbox"/> 15 Days						
Ice Chest No. ERC-02-403		Field Logbook No. EL-1578-7		COA C10DR16700		Method of Shipment Fed Ex								
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. A060038		Bill of Lading/Air Bill No. See OSPC										
POSSIBLE SAMPLE HAZARDS/REMARKS Non Rad Special Handling and/or Storage None 0000015				Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
				Type of Container	G/P	G/P	G/P	aG	aG	G	G			
				No. of Container(s)	1	1	1	1	1	1	1			
				Volume	1000mL	250mL	250mL	250mL	250mL	60mL	250mL			
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 2082; Pesticides - 8081	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time											
J10D65	SOIL	10/26/05	1210	X	X	X	X	X		X				
J10D66	SOIL	10/26/05	1235	X	X	X	X	X		X				
J10D67	SOIL													
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From Bill Hudson		Date/Time 10/26/05 1630		Received By/Stored In Refrigerator		Date/Time 10/26/05 1630		(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium (2) ICP Metals - 6010TR (SW846) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From 3728 Ref 2B		Date/Time 10/27/05 1100		Received By/Stored In Refrigerator		Date/Time 10/27/05 1100								
Relinquished By/Removed From Refrigerator		Date/Time 10/27/05 1100		Received By/Stored In Fed Ex		Date/Time 10/27/05 1100								
Relinquished By/Removed From Fed Ex		Date/Time 10/31/05		Received By/Stored In Fed Ex		Date/Time 10/31/05 9:30								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

Appendix 5

Data Validation Supporting Documentation

APPENDIX A
RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	160 - 128-D-2		DATA PACKAGE: K0062		
VALIDATOR:	FLT	LAB:	EB	DATE: 2/7/06	
			SDG:	K0062	
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99		Alpha Spectroscopy	Gamma Spectroscopy
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J10D63 J10D66					

5.1-2

1. Completeness ☐ N/A

Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) ☒ N/A

Instruments/detectors calibrated? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Calculation check acceptable? Yes No N/A

Comments: _____

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3. Continuing Calibration (Levels D, E)

~~Y~~ N/A

Calibration checked within required frequency?Yes No N/A

Calibration check acceptable?Yes No N/A

Calibration check standards traceable?Yes No N/A

Calibration check standards expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

4. Background Counts (Levels D, E).....~~Y~~ N/A

~~Y~~ N/A

Background Counts checked within required frequency?Yes No N/A

Background Counts acceptable?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

5. Blanks (Levels B, C, D, E) ☐ N/A

Method blank analyzed within required frequency? ☒ Yes ☐ No ☐ N/A

Method blank results acceptable? ☒ Yes ☐ No ☐ N/A

Analytes detected in method blank? Yes ☒ No ☐ N/A

Field blank(s) analyzed? Yes ☒ No ☐ N/A

Field blank results acceptable? Yes ☐ No ☒ N/A

Analytes detected in field blank(s)? Yes ☐ No ☒ N/A

Transcription/Calculation Errors? (Levels D, E) Yes ☐ No ☒ N/A

Comments: no PB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ☐ N/A

LCS /BSS analyzed within required frequency? ☒ Yes ☐ No ☐ N/A

LCS/BSS recoveries acceptable? ☒ Yes ☐ No ☐ N/A

LCS/BSS traceable? (Levels D,E) Yes ☐ No ☒ N/A

LCS/BSS expired? (Levels D,E) Yes ☐ No ☒ N/A

LCS/BSS levels correct? (Levels D,E) Yes ☐ No ☒ N/A

Transcription/Calculation Errors? (Levels D, E) Yes ☐ No ☒ N/A

Comments: _____

7. Chemical Carrier Recovery (Levels C, D, E) ☒ N/A

Chemical carrier added? Yes ☐ No ☐ N/A

Chemical recovery acceptable? Yes ☐ No ☐ N/A

Chemical carrier traceable? (Levels D, E) Yes ☐ No ☐ N/A

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Chemical carrier expired? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E) Yes No N/A

Comments: _____

8. Tracer Recovery (Levels C, D, E) ☐ N/A

Tracer added? Yes No N/A

Tracer recovery acceptable? Yes No N/A

Tracer traceable? (Levels D, E) Yes No N/A

Tracer expired? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E) Yes No N/A

Comments: 65 ← 07% rec 2/1/06 733/234 35 + 36 R

9. Matrix Spikes (Levels C, D, E) ☐ N/A

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? (Levels D, E) Yes No N/A

Spike source expired? Levels D, E) Yes No N/A

Transcription/Calculation Errors? (Levels D, E) Yes No N/A

Comments: no 1/2/06 2/1/06

No ni-63 ms > J all

000020

10. Duplicates (Levels C, D, E) ☐ N/A

Duplicates Analyzed at required frequency? Yes ☒ No ☐ N/A ☐

RPD Values Acceptable? Yes ☒ No ☐ N/A ☐

Transcription/Calculation Errors? (Levels D, E) Yes ☐ No ☒ N/A ☐

Comments: _____

11. Field QC Samples (Levels C, D E) ☐ N/A

Field duplicate sample(s) analyzed? Yes ☐ No ☒ N/A ☐

Field duplicate RPD values acceptable? Yes ☐ No ☒ N/A ☐

Field split sample(s) analyzed? Yes ☐ No ☒ N/A ☐

Field split RPD values acceptable? Yes ☐ No ☒ N/A ☐

Performance audit sample(s) analyzed? Yes ☐ No ☒ N/A ☐

Performance audit sample results acceptable? Yes ☐ No ☒ N/A ☐

Comments: _____ no field qc

12. Holding Times (All levels)

Are sample holding times acceptable? Yes ☒ No ☐ N/A ☐

Comments: _____

000021

13. Results and Detection Limits (All Levels)..... ☐ N/A

Results reported for all required sample analyses?..... ☒ Yes ☐ No ☐ N/A

Results supported in raw data?(Levels D, E)..... ☐ Yes ☐ No ☒ N/A

Results Acceptable? (Levels D, E) ☐ Yes ☐ No ☒ N/A

Transcription/Calculation errors? (Levels D, E)..... ☐ Yes ☐ No ☒ N/A

MDA's meet required detection limits? ☐ Yes ☒ No ☐ N/A

Transcription/calculation errors? (Levels D, E)..... ☐ Yes ☐ No ☒ N/A

Comments: 2 over

000022

Appendix 6

Additional Documentation Requested by Client

000023

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K0062

R511003-04

Method Blank

METHOD BLANK

SDG <u>7753</u>	Client/Case no <u>Hanford</u>	SDG <u>K0062</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R511003-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7753-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-029</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.177	1.4	3.3	10	U	93A
Gross Beta	12587-47-2	2.28	3.6	6.0	15	U	93B
Nickel 63	13981-37-8	0.590	1.4	2.4	30	U	NI_L
Total Strontium	SR-RAD	-0.051	0.13	0.30	1.0	U	SR
Technetium 99	14133-76-7	0.097	0.17	0.54	15	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.010	0.022	1.0	U	U_T
Uranium 233/234	U-233/234	0	0.077	0.30	1.0	U	U
Uranium 235	15117-96-1	0	0.094	0.36	1.0	U	U
Uranium 238	U-238	0.039	0.077	0.30	1.0	U	U
Plutonium 238	13981-16-3	0	0.069	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.069	0.26	1.0	U	PU
Americium 241	14596-10-2	-0.039	0.079	0.30	1.0	U	AM
Potassium 40	13966-00-2	U		0.68		U	GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Radium 226	13982-63-3	U		0.053	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.072	0.10	U	GAM
Europium 155	14391-16-3	U		0.076	0.10	U	GAM
Thorium 228	14274-82-9	U		0.038		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

Remaining Sites Confirm.Samp. - Soil

QC-BLANK 54881

METHOD BLANKS

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>11/17/05</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0062

R511003-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7753</u>	Client/Case no <u>Hanford</u>	SDG <u>K0062</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R511003-03</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7753-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-029</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	162	15	2.8	10		93A	204	8.2	79	73-127	70-130
Gross Beta	196	10	5.5	15		93B	198	7.9	99	76-124	70-130
Nickel 63	221	5.9	2.3	30		NI_L	224	9.0	99	84-116	80-120
Total Strontium	13.3	0.61	0.24	1.0		SR	12.4	0.50	107	81-119	80-120
Technetium 99	142	3.1	0.55	15		TC	136	5.4	104	83-117	80-120
Total Uranium (ug/g)	32.0	3.9	0.22	1.0		U_T	33.0	1.3	97	77-123	80-120
Uranium 233/234	19.0	0.83	0.36	1.0		U	18.6	0.74	102	88-112	80-120
Uranium 235	15.0	0.71	0.038	1.0		U	15.1	0.60	99	88-112	80-120
Uranium 238	18.9	0.82	0.34	1.0		U	20.2	0.81	94	89-111	80-120
Plutonium 238	24.5	2.5	0.22	1.0		PU	24.0	0.96	102	82-118	80-120
Plutonium 239/240	25.7	2.6	0.22	1.0		PU	26.4	1.1	97	82-118	80-120
Americium 241	19.8	2.0	0.21	1.0		AM	20.4	0.82	97	83-117	80-120
Cobalt 60	0.681	0.049	0.017	0.050		GAM	0.685	0.027	99	74-126	80-120
Cesium 137	0.545	0.037	0.024	0.10		GAM	0.543	0.022	100	74-126	80-120

Remaining Sites Confirm.Samp. - Soil

QC-LCS 54880

LAB CONTROL SAMPLES

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>11/17/05</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0062

R511003-05

J10D65

DUPLICATE

SDG <u>7753</u>	Client/Case no <u>Hanford</u>	SDG <u>K0062</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R511003-05</u>	Lab sample id <u>R511003-01</u>	Client sample id <u>J10D65</u>
Dept sample id <u>7753-005</u>	Dept sample id <u>7753-001</u>	Location/Matrix <u>128-D-2:5</u> <u>SOLID</u>
	Received <u>10/31/05</u>	Collected/Weight <u>10/26/05 12:10</u> <u>1291 g</u>
% solids <u>97.7</u>	% solids <u>97.7</u>	Custody/SAF No <u>RC-029-007</u> <u>RC-029</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	7.13	3.3	2.8	10		93A	7.83	4.1	3.7		9	114	0.2
Gross Beta	19.3	4.3	5.3	15		93B	17.5	4.3	5.7		10	59	0.5
Nickel 63	0	1.5	2.6	30	U	NI_L	-0.617	1.6	2.7	U	-		0.6
Total Strontium	-0.023	0.16	0.33	1.0	U	SR	0.078	0.17	0.29	U	-		0.9
Technetium 99	0.425	0.18	0.56	15	U	TC	0.066	0.25	0.53	U	-		2.3
Total Uranium (ug/g)	1.27	0.16	0.022	1.0		U_T	1.28	0.16	0.022		1	33	0.1
Uranium 233/234	0.338	0.23	0.29	1.0		U	0.588	0.27	0.25		54	115	1.4
Uranium 235	0.046	0.091	0.35	1.0	U	U	0.040	0.079	0.30	U	-		0.1
Uranium 238	0.526	0.30	0.29	1.0		U	0.490	0.26	0.25		7	118	0.2
Plutonium 238	0	0.070	0.27	1.0	U	PU	0	0.063	0.24	U	-		0
Plutonium 239/240	0	0.070	0.27	1.0	U	PU	0	0.063	0.24	U	-		0
Americium 241	0.109	0.11	0.21	1.0	U	AM	0.031	0.062	0.24	U	-		1.2
Potassium 40	9.20	0.57	0.32			GAM	9.31	0.69	0.34		1	35	0.1
Cobalt 60	U		0.043	0.050	U	GAM	U		0.039	U	-		0.1
Cesium 137	U		0.034	0.10	U	GAM	U		0.031	U	-		0.1
Radium 226	0.296	0.057	0.061	0.10		GAM	0.363	0.061	0.060		20	50	1.2
Radium 228	0.430	0.12	0.14	0.20		GAM	0.465	0.14	0.15		8	70	0.3
Europium 152	U		0.12	0.10	U	GAM	U		0.071	U	-		0.7
Europium 154	U		0.14	0.10	U	GAM	U		0.14	U	-		0
Europium 155	U		0.071	0.10	U	GAM	U		0.079	U	-		0.1
Thorium 228	0.468	0.047	0.044			GAM	0.404	0.037	0.038		15	38	1.2
Thorium 232	0.430	0.12	0.14			GAM	0.465	0.14	0.15		8	70	0.3
Uranium 235	U		0.12		U	GAM	U		0.12	U	-		0
Uranium 238	U		4.8		U	GAM	U		3.6	U	-		0.4
Americium 241	U		0.041		U	GAM	U		0.11	U	-		1.2

Remaining Sites Confirm.Samp. - Soil

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>11/17/05</u>